

VI.—*List of the Echinodermata dredged between Drontheim and the North Cape.* By R. M'ANDREW, Esq., F.R.S., and L. BARRETT, F.G.S.

*Echinodermata.*

*Holothuriadae*.—In Duben and Koren's list of the Norwegian Echinodermata, thirteen species of this order are described. In our own researches we only procured six species, of which one is new; it belongs to the genus *Eupyrgus*; this same genus is represented on the coast of Greenland by another small species (*E. scaber*). The *Holothuriadae* are not common Radiata on the Norwegian coast, only one species (*Cucumaria frondosa*) being dredged abundantly.

*Echinidae*.—The species of this order procured by dredging are few, but this deficiency is quite made up by the abundance of individuals. The *Echinus miliaris* is common among the Laminaria. *Echinus esculentus* is seen in great abundance at low-water in the south; in the north its place is taken by *Echinus neglectus*. The three species above mentioned being found in great plenty, form a very characteristic feature of the Laminarian zone. *Echinus neglectus* is a very variable species: specimens differ principally in the length of the spines, some being covered with short ones of equal length, others with long purple spines, or long primary and short secondary ones; possibly these may be two species. *Echinocyamus angulosus*, of Leske, was very common in the south among Nullipora and sand. *Schizaster fragilis* was met with several times on a muddy bottom, generally in deep water. In Drontheim Fiord we dredged some specimens in thirty fathoms, but in the north it lives in much deeper water, being brought up from 100 to 150 fathoms. *Spatangus purpureus* occurred but sparingly, in shallow water, as far north as Hammerfest, but it was very small: on one occasion *Montacuta* was found attached to its spines. The two species of *Amphidetus* were taken: *Amphidetus cordatus* is common in the south, and *A. roseus* in the north.

*Asteriadae*.—Eighteen species of *Asteriadae* are included in Duben and Koren's list of the Scandinavian Echinodermata; only ten of these were dredged by us on the northern coast. Some of the species included in the above-mentioned list were procured from the southern part of the western coast; but as our researches were confined to the shore between Drontheim and the North Cape, it could not be expected that we should collect as many species. One species of *Astropecten* was often

dredged in deep water between Omnoëe and Hammerfest, which has not been described; and in deep water off the coast of Finmark we procured two new species of *Astrogonium*. A single specimen of the only species of this genus previously known to live on the coast was dredged in 100 fathoms near Hammerfest. *Ctenodiscus crispatus* was not rare on a muddy bottom in 20 to 50 fathoms: *Ctenodiscus pygmæus* is probably the young of this species: several small specimens were procured. The two species of *Solaster* occurred only very young,  $\frac{3}{4}$  of an inch in diameter; great numbers of these small star-fish were found among *Nullipora* in shallow water. *Uraster rubens* and *Uraster glacialis* were found in great numbers at low-water; the former species attains a large size in the south. Twice it was found feeding on the Periwinkle: it clasps the shell with its five rays, and protrudes its stomach into the shell, even as far as the apex: the operculum is not eaten. It also feeds on Chitons.

*Ophiuride.*—Only seven species of this order were collected during our cruise, all of which are included in a MS. list of the Norwegian Echinodermata furnished us by M. Lutken of the University Zoological Museum, Copenhagen. Three species only occurred abundantly. *Ophiolepis filiformis* is very common in the south, on a muddy bottom. *O. bellis*, Forbes, is very common, from Drontheim to the North Cape, on stony and rocky ground, from low-water to about 30 fathoms; this species, like *O. rosula*, varies much in colour; scarcely two specimens can be found alike. *O. texturata*, though not so common as the last two species, was generally distributed along the whole coast, and, like most species having a wide geographical range, had a great range in depth, from 20 to 200 fathoms.

*Crinoidea.*—The two small species of *Crinoidea* living on the coast were not seen; they are quite distinct from the two species found in Scotland, the largest of which was named *Comatula Woodwardii*, in the Annals for January 1857. We had overlooked the little *Comatula* of that name from the Crag, described by Prof. E. Forbes; and as there are now two species called *C. Woodwardii*, we must change the specific name of the species last described. We propose to call it *Comatula celtica*.

#### *Echinodermata.*

*Note.*—The figures in the following table indicate the greatest and least depths at which each species was dredged alive. In the third column the kind of sea-bottom is named; in the fourth, the letters express the degree of frequency of occurrence:—*a*, abundant, generally distributed and plentiful; *f*, frequent; *l*, local, more or less plentiful in a few localities; *r*, rare; and *v. r.* very rare, when but few examples occurred. In the fifth column

the Northern Scandinavian distribution is given, the coast being divided into three unequal provinces: North Drontheim (Dront.); Nordland (Nord.); and Finmark (Fin.).

Species.	Found living.	Ground.	Freq.	Norwegian Distribution.
<i>Holothuriadæ.</i>				
<i>Cucumaria, Blainv.</i>				
— <i>pentactes, Müller</i> ..	20	gravel	r.	Nordland.
— <i>frondosa, Gunner</i> ..	lit.-25	rock, weed	c.	Dront., Nord., Fin.
<i>Thyonidium, D. &amp; K.</i>				
— <i>commune, Forbes, sp.</i>	15-30	mud	r.	Nordland.
<i>Eupyrgus, Lutken.</i>				
— <i>hispidus, n. sp.*</i> ....	70	mud	r.	Nordland.
<i>Psolus, Oken.</i>				
— <i>phantopus, Linn.</i> ..	20-40	gravel	..	Dront., Nord.
— <i>squamatus, Müller.</i> ..	.....	.....	..	Nord., Fin.
<i>Echinidæ.</i>				
<i>Amphidetus, Agass.</i>				
— <i>cordatus, Penn.</i> ....	15	sand	l.	Dront., Nord.
— <i>ovatus, Leske</i> .....	20-40	mud	a.	Dront., Nord., Fin.
<i>Spatangus, Klein.</i>				
— <i>purpureus, Müller.</i> ..	20-30	sand, mud	r.	Dront., Nord., Fin.
<i>Schizaster, Agass.</i>				
— <i>fragilis, D. &amp; K.</i> ..	30-150	mud	r.	Dront., Nord., Fin.
<i>Echinocyamus, Van Phels.</i>				
— <i>angulosus, Leske</i> ..	15-25	nullipora	a.	Dront., Nord., Fin.
<i>Echinus, L.</i>				
— <i>esculentus, L.</i> ....	lit.-15	rock, lamin.	a.	Dront., Nord.
— <i>miliaris, Leske</i> ....	8	laminaria	a.	Drontheim.
— <i>neglectus, Forbes</i> ..	lit.-30	rock, gravel	a.	Nord., Fin.
<i>Asteriadæ.</i>				
<i>Uraster, Agass.</i>				
— <i>rubens, Linn. sp.</i> ..	lit.-20	rock	a.	Dront., Nord., Fin.
— <i>glacialis, Linn. sp.</i> ..	lit.-40	rock	c.	Dront., Nord., Fin.
<i>Cribella, Agass.</i>				
— <i>oculata, Penn. sp.</i> ..	lit.-130	sand, gravel	c.	Dront., Nord., Fin.
<i>Solaster, Forbes.</i>				
— <i>papposa, Linn. sp.</i> ..	4-8	nullipora	r.	Nord., Fin.
— <i>endeca, Linn. sp.</i> ..	20-70	gravel	r.	
<i>Astropecten, Link.</i>				
— <i>arcticus, Sars</i> ....	150	sand	v.r.	Nordland.
— <i>Mulleri, M. &amp; T.</i> ..	10-50	sand	c.	Nordland.
— <i>Lutkeni, n. sp.</i> ....	20-100	sand	c.	Nord., Fin.
<i>Astrogonium, M. &amp; T.</i>				
— <i>granulare, Müller</i> ..	100	gravel	v.r.	Finmark.
— <i>aculeatum, n. sp.</i> ..	100	gravel	v.r.	Finmark.
— <i>boreale, n. sp.</i> ....	150	gravel	v.r.	Finmark.
<i>Pteraster, M. &amp; T.</i>				
— <i>militaris, M. &amp; T.</i> ..	100-150	gravel, sand	r.	Finmark.

\* The new species are described in the following article.



Species.	Found living.	Ground.	Freq.	Norwegian Distribution.
<i>Ophiurida.</i>				
<i>Ophiolepis</i> , M. & T.				
— <i>filiformis</i> , Müller, sp.	20-40	mud	a.	Drontheim.
— <i>texturata</i> , Forbes ..	20-150	gravel, sand	c.	Dront., Nord., Fin.
— <i>carnea</i> , Lutken ....	50-200	sand	c.	Finmark.
— <i>squamosa</i> , Lutken ..	4-8	nullipora	r.	Nordland.
— <i>bellis</i> , Forbes .....	lit.-30	rock, nullip.	a.	Dront., Nord., Fin.
<i>Ophiacantha</i> , M. & T.				
— <i>spinulosa</i> , M. & T...	50-70	sand	r.	Nordland.
<i>Ophioscolex</i> , M. & T.				
— <i>glacialis</i> , M. & T...	130-150	sand	1 sp.	Finmark.

VII.—*Descriptions of four new species of Echinodermata.*

By LUCAS BARRETT, F.G.S.

[With a Plate.]

*Eupyrgus hispidus*, nob. Pl. IV. fig. 1 a, b.

*Specific character.*—Body covered with perforated, ovate plates, each of which bears a single spine; extremities more or less produced, ascidiform. Suckers alternating, placed in three double distinct rows on the under surface, reaching from mouth to anus. Spines attached to the extremities of the plates by four roots.

This little species resembles in shape *E. scaber*, Lutken, from the west coast of Greenland, which is of about the same size, but differs in the shape of the plates bearing the spines; for while those in *E. scaber* are cruciform, the plates in the species now described are ovate or irregular. (Fig. 2.)

The genus *Eupyrgus*, which was made for the reception of these two species, resembles *Psolus* in being covered with calcareous plates, and in having only three rows of suckers, but differs in the absence of a naked disk, on which the suckers are placed in that genus.

*Astropecten Lutkeni*. Pl. IV. fig. 3 a, b, c.

*Specific character.*—Disk pentagonal; rays produced, pointed; each side formed of two rows of plates, about forty in each row; those in the upper row are nearly as long as broad. The plates forming the lower row are oblong. The apex of the ray is formed of a single excavated plate. The marginal plates are covered with numerous spines, and the whole of the upper surface between the lateral plates is covered with tubercles crowned by groups of minute spines smaller than those which cover the